

NASA External Cost/Schedule Performance Reporting: Overview

PM Challenge 2009

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February 24, 2009

NASA Cost/Schedule Reporting Process

- NASA has multiple related and growing requirements from the Congress/GAO and White House/OMB
- NASA is attempting to make this a single reporting process with:
 - controlled frequency of updates,
 - common data and formats to meet all requirements, and
 - to serve both internal and external reporting needs
- NASA has worked internally among its affected organizations and with Congress/GAO/OMB for more than two years to:
 - Set the content and design of the process and products to best meet, yet balance between the multitude of requirements

Cost and Schedule Reporting Requirements

Pre-2005	Capital Programming Guide - max. life cycle cost/schedule growth metric [OMB]
	Annual Performance Plan (APP) and Performance & Accountability Report (PAR) - max. life cycle cost/schedule growth metric [Congress]
	PART Reviews - max. life cycle cost/schedule growth metric [OMB]
Added in 2005	<p>NASA Authorization Act of 2005 (P.L. 109-155) Section 103: Baselines and Cost Controls [Congress]</p> <ul style="list-style-type: none"> • Development contract release notifications • Major Program Baseline & Annual Reports (MPAR) • Development cost/schedule growth threshold breach notifications, threshold breach reports, and analysis of alternatives
Added 2006	Performance Improvement Initiative: Quarterly cost and schedule reports [OMB]
Added 2007	<p>NSPD-49 Implementation Action: Space Acquisition Program/Project Cost and Schedule Growth [OMB]</p> <ul style="list-style-type: none"> • Baseline & development/contract cost & schedule growth threshold breach reports
Added 2008	<p>NASA FY2008 Appropriations [Congress & GAO]</p> <ul style="list-style-type: none"> • GAO semi-annual project status reviews: NASA QuickLook Book • “Total” cost growth threshold breach notification (shared with other civil space agencies)
	Success criteria for High-Risk Corrective Action Plan: semi-annual reports toward max. life cycle cost/schedule growth metrics [GAO & OMB]

Cost/Schedule Reporting Rqmnts - Frequency

- Quarterly (December/March/June/September)
 - Reports provided to OMB at the quarter end
 - Semi-annually (Mar/Sept) additional data is collected on design maturity/technology readiness/use of EVM to provide to the GAO
 - Transmittal consists of Baseline Reports & tracking toward already established baselines/metrics
- Annually (January/February)
 - Data is collected through the budget formulation process, consistent with the December Quarterly
 - Provided to Congress (reviewed by OMB)
 - Transmittal consists of Baseline Reports & tracking toward established baselines
- Event-driven (Year round)
 - Triggered when a project suspected cost/schedule/contract value growth is significant enough to breach thresholds
 - Transmittal consists of notification letters, threshold reports and analysis of alternatives reports

Cost/Schedule Reporting Rqmnts - Inclusion

- A project is required to be included in external cost/schedule reporting when its LCC is estimated to be \$75M and it:
 - Passes KDP-C, or
 - Releases a large (\$50M) development contract, while in phase A or B (Note only for projects \$250M LCC or above)
- Once a project is included, baseline values for cost or schedule are provided to OMB/Congress
 - NASA has provided external baselines (either development cost or contract value) on 22 “major” projects in either formulation or development, to either Congress or OMB
 - Required baseline values differ for a project in formulation versus one in development
 - Congress does not receive baselines for projects in formulation

Projects Currently Included in External Reports

Projects in Operations

DAWN Phoenix
GLAST/Fermi

→ Included for LCC information.

Projects in Development

Aquarius Glory Herschel
JWST JUNO Kepler
LRO MSO NPP
OCO SOFIA SDO
WISE

→ MPAR reports (to Congress) include only these projects in development.

Projects in Formulation

Ares 1 GPM GRAIL
Orion LDCM
TRDS K/L [EVA]

→ Included in NSPD-49 (OMB) reporting because these projects have contracts in place which include development content.

NOTE: NASA is providing data on contracts and cost/schedule to GAO for projects in formulation, development, and operations to factor into QuickLook Book assessments.

Cost and Schedule Reporting Rqmnts* - Baselines and Thresholds

External Baseline Value	Point When External Baseline Set	External Baseline Provided To	Growth Threshold from Base	Threshold Breach Action
Life Cycle Cost/Sch (phases A-F) ⁺	KDP-C	OMB/ Congress/ GAO	10%	<ul style="list-style-type: none"> • Notification • Yellow/Red Rating
Development Cost (phases C & D)	KDP-C	OMB/ Congress	15%	<ul style="list-style-type: none"> • Notification • Threshold Report • Analysis of Alternatives Rpt
			30%	<ul style="list-style-type: none"> • All of the Above • Legislated Authorization to continue w/project
Key Schedule Milestone (Launch Readiness)	KDP-C	OMB/ Congress	6 months	<ul style="list-style-type: none"> • Notification • Threshold Report • Analysis of Alternatives Rpt
Development Contract Cost-Original Value	Phase A or B plus >\$50M Contract Release	OMB	15% of weighted average	<ul style="list-style-type: none"> • Notification • Threshold Report

** Requirements are applicable to projects w/estimated LCC >\$250M, except where noted below*

+ Applicable to a project w/estimated LCC >\$75M and <\$250M, or cost-weighted average at the portfolio level

Cost/Schedule Reporting Rqmnts - Other Data

- OMB, Congress and GAO require other data elements in reporting:
 - Project purpose and key technical characteristics/scope necessary to fulfill those purposes
 - Estimated life cycle (total, formulation, development, ops) costs/key milestones in phases A & B (*the “KDP-B” estimate*)
 - Reserves
 - Cost/schedule confidence levels
 - Critical technologies, back up technologies and technology readiness levels
 - Design maturity: drawings completed/drawings planned
- Depending on the external stakeholder, these data elements are used for context on the project, interpretation of its performance issues, and potentially for decision-making on budget/appropriations

NSPD 49 Contract Reporting

- For NASA and civil programs and projects, the initial baseline cost and schedule goals shall be established at Preliminary Design Review (PDR) or the point at which the Department or Agency commonly authorizes a program or project to proceed to implementation. If a program or project has begun to procure flight subsystems with a single contract value in excess of \$50 million prior to PDR, the baseline acquisition cost goal shall be provided for the sum of any such contracts and their average cost performance relative to their cost goals shall be reported per the thresholds stated in the criteria set forth in Section I.

- The ONLY reporting threshold for projects in formulation is changes in contract value.
- Preliminary lifecycle cost estimate (LCCE) and schedule estimate is provided for information purposes only.
- NASA is addressing the policy with OMB:
 - Clarification on what it means to ‘begin to procure flight subsystems’ within NASA.
 - A means of distinguishing cost growth from changes in contracted content.
- Meanwhile PA&E and Office of Procurement are working with programs and MDs to resolve some questions about contract values.

MD Role in Cost/Schedule Reporting

- Provide comment and implications of following Congressional/GAO and OMB policy and requirements
 - Support negotiation and help provide valid arguments on reducing requirements
 - Aids PA&E with striking a balance between internal and external organization's needs
- Baseline MD processes to blend into Agency process, tools, methodologies and procedures for meeting external requirements
- Ownership of cost/schedule and supporting reported data
 - Provide quality and sufficient data and reporting content for meeting requirements
- Accountability for program and project management to keep NASA out of this reporting

PA&E Role in Cost/Schedule Reporting

- Negotiation with, and translation of, Congressional/GAO and OMB policy and requirements (worked with OLIA and OGC)
- Design of process, formats, tools, methodologies and procedures for meeting external performance reporting requirements
- Verification and validation of cost/schedule and supporting report data
 - Sufficiency for meeting intent of requirements
 - Consistency against similar data reported externally
- Review and concurrence on final products (shared with MD, OCE, OCFO and OLIA) before signature by Administrator or OLIA Head
- Utilize data for internal assessments and programming during budget formulation

**NASA External Cost/Schedule
Performance Reporting:**
GAO Engagement 120699:
“Quick Look” Book

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Background

- Results from the FY08 Appropriation Conference Report language*:

“The Appropriations Committees are concerned about standardizing the reporting of cost, schedule and content for NASA research and development projects including advanced technology and operational systems upgrades. As a result, the Government Accountability Office (GAO) is directed to prepare project status reports on selected large-scale, NASA programs, projects or activities. In undertaking these reports, GAO should follow the guidance it recommended to the Congress in GAO report GAO/NSIAD 90-40.”

- Engagement objective: “Identify and gauge the progress and potential risks associated with selected NASA acquisitions.”

* Originated in the House Appropriations Committee

Background-Assessment Methodology

- Project Status Reports will be the equivalent of the NASA version of the DoD “Quicklook Book”
 - Provided annually to Congress in time for budget deliberations
 - Designed to aid interpretation of data within NASA’s Congressional Budget Justification
 - Provides information on significant trends across multiple years and projects
- “Quicklook” methodology based on demonstrating an appropriate level of knowledge/risk reduction at key points in the program/project lifecycle
 - Life cycle key points.
 - SDR/P-NAR (KDP-B)
 - PDR/NAR (KDP-C)
 - CDR
 - Project data from at these key life cycle points is analyzed
- GAO Report GAO/NSIAD 90-40, requires NASA to report cost, schedule and technology maturity at the same life cycle decision points (NOTE unclear as to whether KDP-A or KDP-B)

Important to Note



Data Requested by GAO*

- Cost: estimated life cycle cost by Formulation, Development, Operations, and Other (overhead if in full cost) for each fiscal year, since project start (KDP-A)
- Schedule: estimated dates for key life cycle milestones as defined per NPR 7120.5, at SDR/P-NAR, PDR/NAR, and current (FY09 President's Budget)
- Contracts: key contracts for each project with contractor, date of award, original value, current value (FY09 President's Budget), and contract type
- Technology Maturity: critical technologies, back up technologies and technology readiness levels at SDR/P-NAR, PDR/NAR, CDR or most recent design review (i.e. this could be SRR depending on the phase in the lifecycle)
- Design Stability: number of releasable drawings vs. total planned drawings at PDR/NAR and CDR

**For Projects in formulation or development*

Approach-Assessment Methodology

- NASA version of the DoD “Quickbook”
 - Provided annually to Congress in time for budget deliberations
- “Quicklook” methodology based on demonstrating an appropriate level of knowledge at key points in the program/project lifecycle
 - Annual update on performance trends and a risk assessment
 - Monitors key indicators on cost, schedule, critical technology, drawing readiness (numbers of planned drawings vs. completed drawings), and contracts including task orders and JPL sub-contracts
 - Uses these indicators for assessment of performance, technology readiness, design maturity and production maturity, to make a judgment as to whether there is risk that will warrant significant cost and schedule growth downstream
- Starting with the 19 projects currently under Congressional and OMB reporting
 - Future years to include other space flight formulation/development projects, operational system upgrades and advanced technology programs

Approach-Data Gathering

- Annual data call to all programs and projects in reporting, which includes:
 - Raw data collection per a Data Collection Instrument (DCI)
 - Series of general and specific questions about the status of the project at key project life cycle milestones, based upon DCI responses and information researched about the individual projects
 - Key documentation per NPD 7120 (do not need to be final signed copies, GAO will accept draft copies)
- Agreed to take data from HQ, if already collected and supplement from the projects
 - HQ collects cost, schedule and contract data for President's Budget Request, OMB/Congressional reporting and BPR
- Visits will be made to programs and projects of interest for more in-depth questioning